

GILBERT BRIDGE

U.S. Route 52, spanning the Guyandotte River
near the confluence of Gilbert Creek

Gilbert

Mingo County

West Virginia

HAER No. WV-63

HAER,
WVA,
30-GIBT,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service

Northeast Region

Philadelphia Support Office

U.S. Custom House

200 Chestnut Street

Philadelphia, P.A. 19106

HISTORIC AMERICAN ENGINEERING RECORD

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GILBERT BRIDGE

HAER No. WV-63

Location: U.S. Route 52, spanning the Guyandotte River near the confluence of Gilbert Creek, Gilbert, Mingo County, West Virginia.

UTM: 17.423460.4163100
Quad: Gilbert, West Virginia

**Date of
Construction:** 1925

Present Owner: West Virginia Department of Transportation
Division of Highways
Capital Complex, Room 109, Building 5
Charleston, West Virginia 25305

Present Use: Vehicular and Pedestrian Bridge

Significance: The Gilbert Bridge, which was constructed during the "Good Roads Movement" of the 1920s, allowed for the economic and geographic expansion of Gilbert, West Virginia by providing safe and convenient access to both banks of the Guyandotte River. In addition, the bridge served as a vital link in the State Road system which connected Mingo County to other counties in West Virginia.

Project Information: This documentation was undertaken in 1995 in accordance with the Memorandum of Agreement by the West Virginia Department of Transportation as a mitigative measure prior to the replacement of the bridge.

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General Bridge Description

The Gilbert Bridge was built in 1925 by the Vincennes Bridge Company of Vincennes, Indiana. The bridge, which was built during the "Good Roads Movement" in West Virginia, consists of three simple spans; one 200' riveted steel Parker thru truss span with one 80' steel pony truss at each end supported on full height concrete abutments and solid concrete piers with an overall length from backwall to backwall of 368'. Steel riveted floor beams supporting steel stringers transfer loading from the asphalt deck. A 5' sidewalk on the upstream side, formed with the roadway deck, is supported by two lines of stringers on truss mounted brackets. The Gilbert Bridge has a clear roadway width of 17'7" between curbs and there is an average 1 1/2" asphalt wearing surface on a filled steel grid deck. There is no indication of the original color of the bridge, although it is currently painted battleship gray. The bridge is representative of truss bridges built in the United States in the late nineteenth and early twentieth centuries. The Gilbert Bridge spans the Guyandotte River at the confluence of Gilbert Creek at Gilbert, West Virginia in Mingo County and is essential to social and economic development of the community of Gilbert since it connects the separate sections of the town that have developed along the eastern and western banks of the Guyandotte River.

Summary Description of Gilbert Bridge and Setting

The community of Gilbert, West Virginia lies within Mingo County in the coal fields of southern West Virginia, along the foothills of the Appalachian Mountains. The community is concentrated along the eastern and western banks of the Guyandotte River at the confluence of Gilbert Creek. The community is connected by the Gilbert Bridge which spans the Guyandotte River.

The town site is rich in history, being a natural encampment site for Native Americans and pioneers. Gilbert was named for Gilbert Creek, which runs through the town, and the creek in turn was named for one of the earliest white settlers of the region, Joseph Gilbert. Local folklore says that Gilbert was killed in 1792 by Native Americans while on a hunting expedition. The land comprising present day Gilbert was originally owned by John Stafford. Stafford was born on April 9, 1810 in Tazewell, Virginia and died on March 12, 1862 in Gilbert, Virginia. Stafford, his wife, Levisa, and their two sons John Wesley and Issac, settled in Gilbert in 1833.¹

1. Darrell G. Brumfield and Flossie Hatfield Smith. *Stories About Gilbert, West Virginia* (Baltimore: Gateway Press, Inc. 1993), 11-13.

The community of Gilbert has remained relatively small because of the inaccessibility of the region by automobile and the mountainous topography of the area. When Gilbert was incorporated on January 28, 1918 it had a population of one hundred residents. According to census data released in 1993, Gilbert's present day population is 450.

Extractive industries, primarily coal mining, and the construction of railroads were key to the development of Mingo County and the community of Gilbert. People had known of the coal beds of southern West Virginia since colonial times but for nearly a century these coal lands remained relatively undisturbed. At the time of the Civil War only 185 mines employing 1,600 workers existed in all of present day West Virginia.² The major impediment to development of these coal fields was transportation for the coal. Although railroads linked much of the nation by 1870, railroads had still not penetrated the Appalachian mountains. The few commercial mines in West Virginia shipped their coal down the Kanawha and Ohio rivers in flatboats - a process that was slow, cumbersome, and not economically advantageous. Consequently, at the end of the 1870s, southern West Virginia was still a relatively isolated, underpopulated, agrarian region, occupied by subsistence farmers, hunters, and family clans.

In the 1880s, however, the money and means became available for the railroads to penetrate the mountains. The growth of railroads in southern West Virginia was a major turning point for the economy of the area. As the railroads were being built, land and coal speculators poured into the area to grab the land that contained the coal. The Chesapeake and Ohio was the first large railroad in southern West Virginia. Designed to link the Atlantic with the Midwest farmland via the New, Kanawha, and Teays valleys, it grew out of two older lines, the Virginia Central, and the Covington and Ohio. The line entered West Virginia in Greenbrier County, traveled through the canyon of the New River, followed the Great Kanawha River, and then cut across to Huntington on the Ohio River. The Chesapeake and Ohio extended its lines along the Guyandotte River to Logan, and eventually through Gilbert.³

The second major rail line to impact southern West Virginia was the Norfolk and Western. Built by Frederick J. Kimball, the Norfolk and Western was developed to open the coal fields of southern West Virginia and to serve as a nucleus of a great coal-carrying transportation system. The New River division of the N&W was constructed in 1881-82. The Flat Top Mountain extension was

2. David Alan Corbin. *Life, Work, and Rebellion in the Coal Fields: The Southern West Virginia Miners, 1880-1922* (Chicago: University of Illinois Press, 1981), 2.

3. Phil Conley and William Doherty. *West Virginia History* (Charleston, West Virginia: Education Foundation, Inc., 1974) 306-309.

begun in 1884 and completed in 1886. By 1894 the N&W line was constructed through Mingo County and the community of Gilbert. Between 1894 and 1911 eleven more branches with their sub-branches were completed.

Within two decades of the development of railroads in southern West Virginia, the superior and cheaper supercoals of the state had captured the nation's largest coal markets from the older, established Midwestern coal fields. The total coal production of West Virginia increased from 489,000 tons in 1867 to 4,882,000 tons in 1887 to 89,384,000 tons in 1917. In Mingo County coal production jumped from 95,000 tons in 1895, one year after the Norfolk and Western completed its line through the county, to nearly 1,500,000 tons ten years later.⁴

Along with the opening of the coal fields by the railroads, the development of a viable road and bridge system has been key to Gilbert's survival. The construction of US Route 52 and County Route 80 made Gilbert assessable to both residents and business concerns alike. The construction of the Gilbert Bridge in 1925 has allowed Gilbert to expand, both economically and geographically, by connecting both the eastern and western banks of the Guyandotte River.

The Gilbert Bridge was built as a result of the progressive "Good Roads Movement" that began in the 1910s and culminated in the early 1920s. During the first two decades of the twentieth century a comprehensive reform movement known as "Progressivism" affected nearly every aspect of American society. During the so called "Progressive Period" Americans worked to alleviate many of the problems that had been created by the massive urbanization, industrialization, and immigration of the late nineteenth and early twentieth centuries. Both northern and southern reform groups worked to ease poverty, child labor, and the political corruption of city bosses.

Progressive elements are also found in the great wave of southern reform known as the "Good Roads Movement." "The South is today enjoying an era of prosperity and expansion," wrote the director of the U.S. Department of Agriculture (USDA) Office of Public Roads in 1910. "Its manufacturing industries are being enlarged; its railroads are being extended, and its agriculture is . . . opening up to new possibilities. . . . But in order for this growth to continue," he warned, "it will be necessary that the roads of the South be improved."⁵

4. Corbin, *Life, Work, and Rebellion the Coal Fields*, 5.

5. Alex Lichtenstein, "Good Roads and Chain Gangs in the Progressive South: the Negro Convict is a Slave," *The Journal of Southern History* 69 (February 1993): 86.

West Virginia's "Good Roads Movement" was initiated in 1912 by Governor Henry D. Hatfield when he organized two "Good Roads" days "for the purpose of creating sentiment and stimulating the interest of our people in the subject of highway improvement."⁶ Hatfield recognized that the lack of a viable road system in West Virginia was detrimental to the state's economic development. Because West Virginia had few permanent roads, good state highways were needed to connect cities and to increase opportunities for industrial growth.

In his second biennial message to the West Virginia legislature in 1917, Hatfield said "the time has come now when we should have a division of the roads and laying-out of thoroughfares, which will be represented by main arteries and which will connect up the different counties. . . . there is nothing that will do more to connect remote sections of our state with each other and bring the people into close communion than this accomplishment."⁷ In 1917, under the guidance of Governor Hatfield, the West Virginia Legislature passed the "Good Roads Law" for the construction of permanent roads. The 1917 law made provision for working state prisoners on the construction of permanent roads, however, it did not create a state agency to oversee the construction nor did it provide funds for the construction of the roads. This was not achieved until 1921.

To assist with the construction, reconstruction, maintenance and repair of public roads and bridges the state legislature created The State Roads Commission on June 1, 1921.⁸ In addition, the legislature created the "State Road Fund" which was supported by proceeds derived from license taxes, the sale of state bonds, and funds appropriated by the state legislature and federal government. The road system, as laid out by the State Road Commission, was to comprise approximately 3,500 miles in state routes.

6. *First Biennial Message of Governor Henry D. Hatfield to the West Virginia Legislature, October 1, 1912 to June 30, 1914* (Charleston, West Virginia: Tribune Printing Company, 1915), 36.

7. *Second Biennial Message of Governor Henry Hatfield to the Legislature of 1917* (Charleston, West Virginia: Tribune Printing Company, 1917), 46-47.

8. *Acts of the Legislature of West Virginia, 1920-1921 Sessions* (Charleston, West Virginia: Tribune Printing Company, 1921), 296.

To finance road development and bridge construction the state legislature authorized Governor Ephraim Morgan to sell \$15,000,000 five percent road bonds.⁹ In addition, West Virginia secured \$802,359.77 in federal aid from the Bureau of Public Roads in the Department of Agriculture for the fiscal year ending June 30, 1922 and \$534,906.51 for the fiscal year ending June 30, 1923 for a two year total of approximately \$1,337,265.¹⁰

By 1922 West Virginia's investment in its road system was beginning to pay dividends. With \$8,000,000 secured from the sale of the road bonds, in combination with the federal dollars, the State Road Commission embarked on an aggressive road and bridge building campaign. Between June 30, 1921 and June 30, 1922 contracts were awarded for the construction of 330.31 miles of road. Between July 1, 1922 and June 30, 1923 contracts were awarded for an additional 668.36 miles of roads and forty-two bridges.¹¹ In addition to new road construction, the state took over the maintenance of 849 miles of county roads.

Bridge construction in West Virginia was also increased as a result of the creation of the State Roads Commission. From July 1, 1922 to June 30, 1923 the Bridge Department of the State Roads Commission prepared seventy-eight special designs, checked twenty-seven sets of shop drawings, prepared seven plans for the repair of existing structures and inspected twelve old bridges. During the entire year forty-two bridges were let by special contract. According to the commissions 1923 annual report more plans were prepared for steel structures than for any other type of structure and that more steel super-structure than concrete bridges were built. This was done by reason of the fact that during the latter part of 1922 and the first part of 1923 the price of steel was low and consequently steel bridges proved more economical.

In 1923 the state legislature authorized Governor Morgan to sell an additional \$15,000,000 in bonds, of which \$5,000,000 were sold on April 1, 1923. This money was in addition to the first issue of \$15,000,000 in state bonds in 1921. This money was immediately made available for road construction.¹²

9. *First Biennial Message of Governor Ephraim F. Morgan to the Legislature of 1923* (Charleston, West Virginia: Tribune Printing Company, 1923), 31.

10. *The State Road Commission of West Virginia Annual Report* (Charleston, West Virginia: Tribune Printing Company, 1923), 12.

11. *The State Road Commission Annual Report, 1923*, 7-8.

12. *The State Road Commission of West Virginia Annual Report, 1923*, 8.

Road and bridge construction in Mingo County, West Virginia boomed in 1923 as a result of the infusion of capital into the State Road Fund. By the end of June 1923 two projects, one involving the grading and graveling of 18.7 miles of road connecting the communities of Williamson and Gilbert, and the second involving the building of a two span concrete arch bridge over Pigeon Creek, were either under construction or completed at a cost of \$451,815.15. It was also in 1923 that "plans are being prepared for the Gilbert Bridge. . . which will be placed under contract in the future."¹³

The number of road and bridge projects in West Virginia continued to expand during the fiscal year of 1923-24, which extended from July 1, 1923 until June 30, 1924. During this period the state received \$696,085.80 in federal aid for various road and bridge projects. By June 30, 1924 the Gilbert Bridge had become project number 3120 and bridge number 887. In addition, the design for the bridge, which consisted of two eighty-foot pony trusses, and one two hundred foot Parker thru steel truss, had been approved.

Fiscal year 1924-1925, which extended from July 1, 1924 to June 30, 1925, witnessed the continued growth and expansion of West Virginia's road and bridge system. Once again the State Road Fund received an infusion of cash. The Legislature of 1925 authorized the sale of \$20,000,000 of road bonds, while the state was the recipient of a \$798,275.47 federal road grant. The new capital allowed the state to move forward with its ambitious road building program. During this period contracts for 221.16 miles in roads and twenty bridges were awarded. By June 30, 1925 the total contract mileage awarded since 1921 totaled 1181.98 miles.¹⁴

From July 1924 to June 1925 the State Road Commission was also busy inspecting old bridges and constructing new ones. During this period thirty-five special designs were made, sixteen shop drawings were checked and twenty-three inspections and reports were made on old bridges. It was also during this period that the contract for the Gilbert Bridge was awarded. The contract was assigned to the Vincennes Bridge Company of Vincennes, Indiana on May 1, 1925.¹⁵ In addition to the Gilbert Bridge contract, the Vincennes Bridge Company was also awarded several other bridge contracts, including Mullins Bridge in Wyoming County, the Bear Fork Bridge in Gilmer County, and the Justice Bridge in Mingo County.

13. *The State Road Commission of West Virginia Annual Report, 1923, 88.*

14. *The State Road Commission of West Virginia Annual Report, July 1, 1924 to June 30, 1925* (Charleston, West Virginia: Tribune Printing Company, 1925), 10.

15. *The State Road Commission of West Virginia Annual Report, 1925, 169.*

Any discussion of the history of the Gilbert Bridge would not be complete without a review of the development of the steel truss bridge. Bridges, especially the iron and steel bridges of the late nineteenth and early twentieth centuries, were crucial to America's industry and economy. Deriving their structural form from earlier-covered bridges, they were built with materials that did not require extensive protection from the elements and that provided a strong, safe structure at a cost with the financial capabilities of many communities or states. These bridges were most often prefabricated by specialized bridge companies and then erected throughout the country in both rural and urban settings. As a result, their presence provides a unifying structural and visual element within the American landscape.

The most common bridge built between 1850 and 1940 was the metal truss bridge, a design that used many small pieces or members to make a long truss that provided the length and strength necessary for the bridge. There were various ways these small members could be arranged, and it is the arrangement of these members within the bridge structure that determines the specific truss form.

The earliest bridge trusses date back over five hundred years and were constructed of wood. The king post and the queen post represent the basic forms of these trusses, and their modern day descendants can still be seen in very short bridges in rural areas. In 1803 Theodore Burr of Pennsylvania constructed a bridge which combined several king post trusses with a wooden arch, which resulted in a stronger bridge. Burr's system had the bulk of the load taken by a timber truss frame, with a light arch running through the depth of the frame for strengthening.¹⁶ Following Burr's patent, other bridge builders modified his design and utilized a wooden arch with truss configurations other than the multiple king post. The first modern truss design not to employ the arch was the Town lattice truss, patented in 1820 by Connecticut architect Ithiel Town.¹⁷ The Town truss utilizes closely spaced diagonal timbers to produce a rigid network of significant strength.¹⁸ Because wooden trusses were susceptible to fire and insect damage, beginning in the 1830s bridge builders turned to iron.

16. Martin Hayden, *The Book of Bridges* (New York: Galahad Books, 1976), 52; T. Allan Comp and Donald Jackson, "Bridge Truss Types: A Guide to Dating and Identifying," *Technical Leaflet*: 2.

17. David Weitzman, *Traces of the Past: A Field Guide to Industrial Archaeology* (New York: Charles Scribner's Sons, 1980), 59.

18. Comp and Jackson, "Bridge Truss Types," 2.

The first patent truss to incorporate iron into the basically timber structure was the Howe truss. Patented in 1840, the essential feature of the Howe truss was its use of metal vertical functioning as tension members and wooden diagonals functioning as compression members. The basic design of the Howe truss was used, with modifications, late into the nineteenth century.

The century from 1780 to 1880 was an age of iron, in increasing quantity and increasingly sophisticated designs. However, because of several accidents caused by the collapse of iron bridges, including the 1865 collapse of an all iron Howe truss built in Ashtabula, Ohio which resulted in the death of ninety-two people, enthusiasm for iron trusses faded.¹⁹ With the development of steel in the late nineteenth century, the use of iron for bridge construction came to a crashing halt.

Steel proved to be more versatile than any previously used material in bridge construction. It enabled all the established bridging methods to reach new peaks of development. Steel also provided its own possibilities of new forms, and enabled concrete, the other new material of the late nineteenth century, to evolve as an effective medium.

The majority of steel trusses built in the United States are of two primary forms, the Pratt and the Warren. Both forms date back to the 1840s, although most of the remaining bridges utilizing these trusses were built after 1900. After 1850 many different trusses were promoted, but, "in the ensuing competition between bridge builders, the Pratt and Warren trusses gradually demonstrated their versatility, durability, and economic desirability to such an extent that by the early twentieth century, almost all bridge trusses were constructed using variations of one of these forms."²⁰

The first scientifically patented truss was the Pratt truss which was patented in 1844 by Thomas and Caleb Pratt and is distinguished by vertical members acting in compression and diagonals acting in tension. This design feature, according to T. Allan Comp, a Senior Historian with the National Park Service "reduced the length of the compression members to help prevent them from bending or bucking"²¹. The most common type of early twentieth century truss bridge was the pin-connected thru Pratt.

19. Hayden, *The Book of Bridges*, 85.

20. Comp and Jackson, "Bridge Truss Types," 3.

21. Hayden, *The Book of Bridges*, 84; Comp and Jackson, "Bridge Truss Types," 3.

Many twentieth century trusses, including the Parker and Camelback, maintain the Pratt configuration of compression and tension members, while modifying the shape of the top and bottom chords. The Parker truss is basically a Pratt design with a polygonal top chord. Because of its arched top chord, the Parker truss is stronger than a regular Pratt truss, even though it is of constructed with the same amount of building material.²² The Camelback truss was designed with the Parker truss in mind, although unlike the Parker truss, it has an arched top cord formed with five slopes. The Camelback design created greater standardization of its members and better stress distribution, and in most cases it was the most economical truss for many highway and railroad spans.²³ The Pratt truss and its progeny became an American standard and represent the overwhelming number of truss bridges, including the Gilbert Bridge, built during the late nineteenth and early twentieth centuries.

The completion of the Gilbert Bridge during the summer of 1925 was just one symbol of the tremendous gains in the amount of road mileage and in the number of bridges that West Virginia had made since 1921. By June 30, 1926, 2206.05 miles of state roads had been completed since 1921. In addition, hard surfaced and or graded connections linking all fifty-five county seats in West Virginia had been built or placed under contract. An additional \$797,295.00 in federal funds were secured, for a five year total of \$3,628,922.55. This money, along with that secured from bond sales, funded 403.60 miles of road construction and thirty-three bridges.²⁴

The construction of Gilbert Bridge was significant for two reasons. First, it allowed for the economic, social, and geographic expansion of the community of Gilbert, West Virginia by providing easy and safe access to both sides of the Guyandotte River. Since the opening of the bridge, the community of Gilbert has grown, so that today businesses and homes can be found on both the eastern and western banks of the river. Second, the Gilbert Bridge served as a vital link in connecting State Roads 8 and 10, both of which were built during the Good Roads Movement of the 1920s. Gilbert Bridge represents the tremendous gains that West Virginia made in road and bridge construction during the Good Roads Movement of the 1920s. With funds secured from the sale of

22. *Comp and Jackson, "Bridge Truss Types," 3.*

23. *Comp and Jackson, "Bridge Truss Types," 5.*

24. *The State Road Commission of West Virginia Annual Report, July 1, 1925 to June 30, 1926 (Charleston, West Virginia: Tribune Printing Company, 1926), 7-109.*

bonds and federal grants, the state built thousands of miles of roads and hundreds of bridges, thereby creating a system of state roads which connected the fifty-five county seats in the state, and which provided safe and reliable access to West Virginia from the surrounding states of Maryland, Kentucky, Pennsylvania, Ohio, and Virginia. West Virginia continued with its ambitious road and bridge building project until the end of the 1920s when federal and state funds were reduced on account of the Great Depression.

SOURCES OF INFORMATION/BIBLIOGRAPHY

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KEY TO BUILDINGS, GILBERT BRIDGE SITE PLAN, 1995

Building No.	Building Name/Use
1	Ed'S Place
2	Dwelling
3	Abandoned Store
4	Clay's Supermarket
5	Ward Hardware and Furniture Company
6	Ward Hardware and Furniture Company
7	Gray-Seal Paint
8	Abandoned Building
9	Craft Store
10	Dwelling
11	McDonald's
12	Foodland Supermarket
13	Gas Station
14	Gilbert Water Works
15	Mobile Home



